
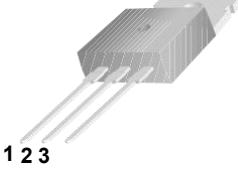
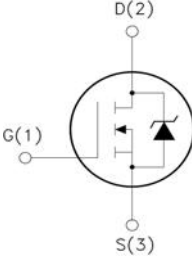


<p>TNP75N75</p> <p>Features:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Low Intrinsic Capacitances. <input type="checkbox"/> Excellent Switching Characteristics. <input type="checkbox"/> Extended Safe Operating Area. <input type="checkbox"/> Unrivalled Gate Charge :Qg=76nC (Typ.). <input type="checkbox"/> $V_{DSS}=75V, I_D=75A$ <input type="checkbox"/> $R_{DS(on)} : 0.015\Omega$ (Max) @$V_G=10V$ <input type="checkbox"/> 100% Avalanche Tested 	<p style="text-align: center;">TO-220</p> <div style="text-align: right;">  </div> <div style="text-align: center;">  <p>1 2 3</p> </div> <div style="text-align: center;">  </div> <div style="text-align: right; margin-top: 10px;"> <p>1. Gate (G)</p> <p>2. Drain (D)</p> <p>3. Source (S)</p> </div>
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Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter	Maximum	Unit
V _{DSS}	Drain-to-Source Voltage	80	V
V _{GSS}	Gate-to-Source Voltage	±25	V
I _D ³	Continuous Drain Current	T _C =25°C	80
		T _C =100°C	70
I _{DP} ⁴	Pulsed Drain Current	340	A
I _{AS} ⁵	Avalanche Current	20	
E _{AS} ⁵	Avalanche energy	410	mJ
PD	Maximum Power Dissipation	T _C =25°C	240
		T _C =100°C	100
T _J , T _{STG}	Junction & Storage Temperature Range	-55~175	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
R _{θjc}	Thermal Resistance-Junction to Case	0.52	°C/W
R _{θja}	Thermal Resistance-Junction to Ambient	55	

Electrical Characteristics (TA=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	75	—	—	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=64V, V_{GS}=0V$	—	—	1	uA
		$T_J=125^\circ C$	—	—	100	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 25V, V_{DS}=0V$	—	—	± 100	nA
$R_{DS(on)}^1$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=40A$	—	10	15	mΩ
			—	—	—	
Diode Characteristics						
V_{SD}^1	Diode Forward Voltage	$I_{SD}=40A, V_{GS}=0V$	—	—	1.3	V
I_S	Diode Continuous Forward Current		—	—	75	A
t_{rr}	Reverse Recovery Time	$I_F=40A,$	—	25	—	nS
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/\mu s$	—	18.5	—	
Dynamic Characteristics²						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V,$ Frequency=1MHz	—	1.3	—	Ω
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=25V$ Frequency=1MHz	—	3110	—	pF
C_{oss}	Output Capacitance		—	445	—	
C_{rss}	Reverse Transfer Capacitance		—	270	—	
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=37.5V, I_D=40A,$ $V_{GS}=10V, R_G=6.8\Omega$	—	20.4	—	nS
t_r	Rise Time		—	63	—	
$t_{d(off)}$	Turn-Off Delay Time		—	67	—	
t_f	Fall Time		—	43	—	
Gate Charge Characteristics²						
Q_g	Total Gate Charge	$V_{DS}=37.5V, V_{GS}=10V$ $I_D=40A$	—	76	—	nC
Q_{gs}	Gate-to-Source Charge		—	9.5	—	
Q_{gd}	Gate-to-Drain Charge		—	40	—	

Note: 1: Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

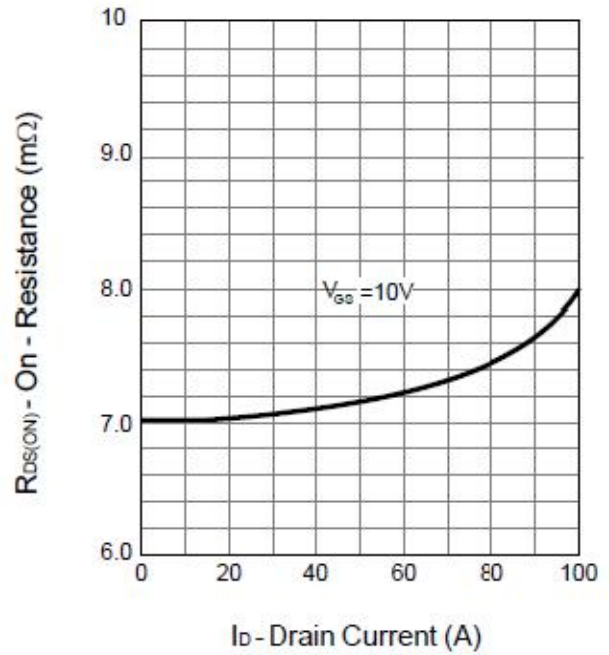
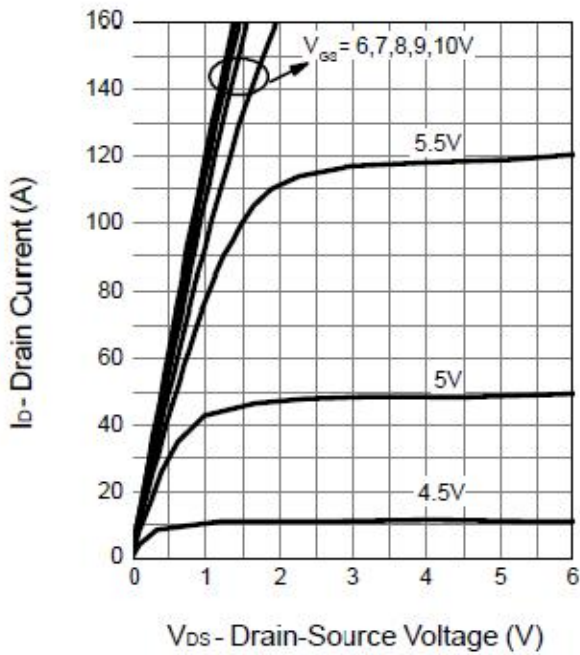
2: Guaranteed by design, not subject to production testing.

3: Package limitation current is 50A. Calculated continuous current based on maximum allowable junction temperature.

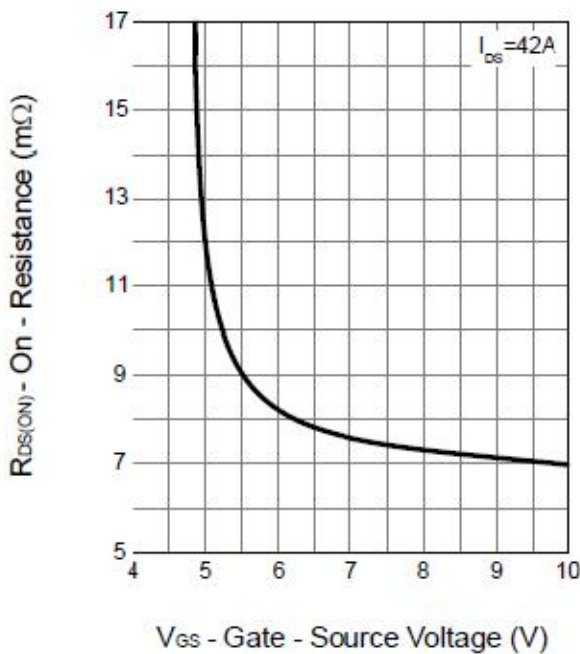
4: Repetitive rating, pulse width limited by max junction temperature.

5: Starting $T_J = 25^\circ C, L = 1mH, I_{AS} = 40A$.

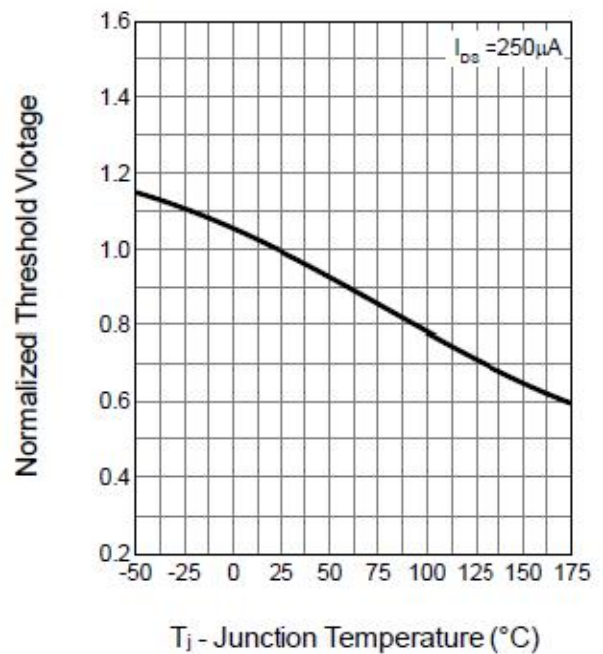
Typical Characteristics



Drain-Source On Resistance

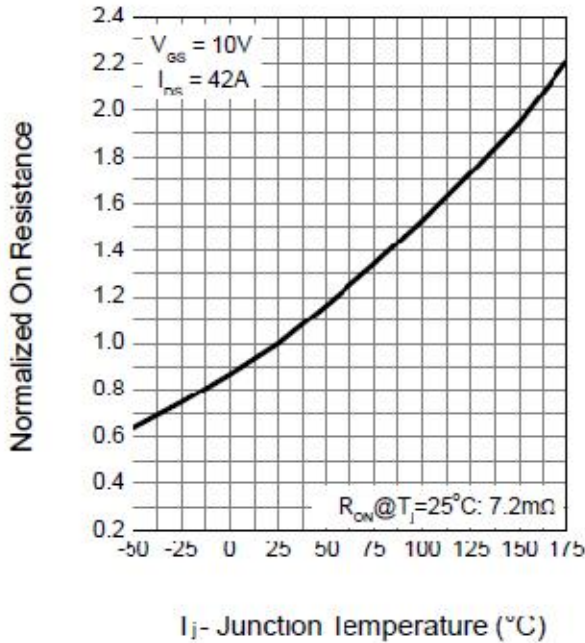


Gate Threshold Voltage

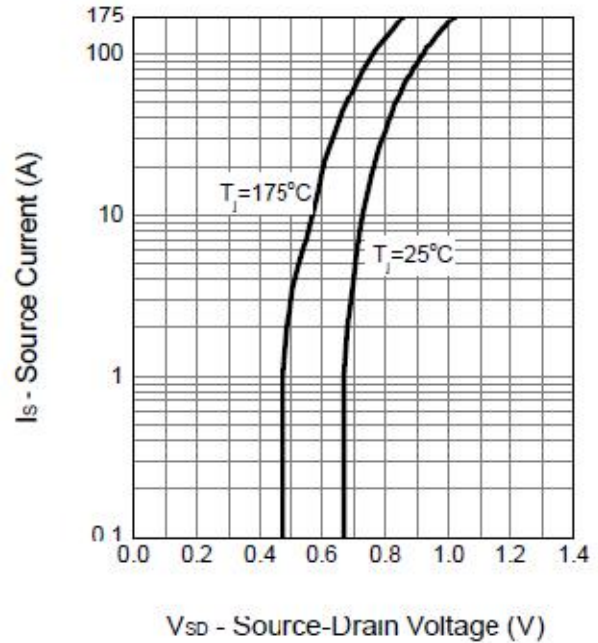


Typical Characteristics (Continued)

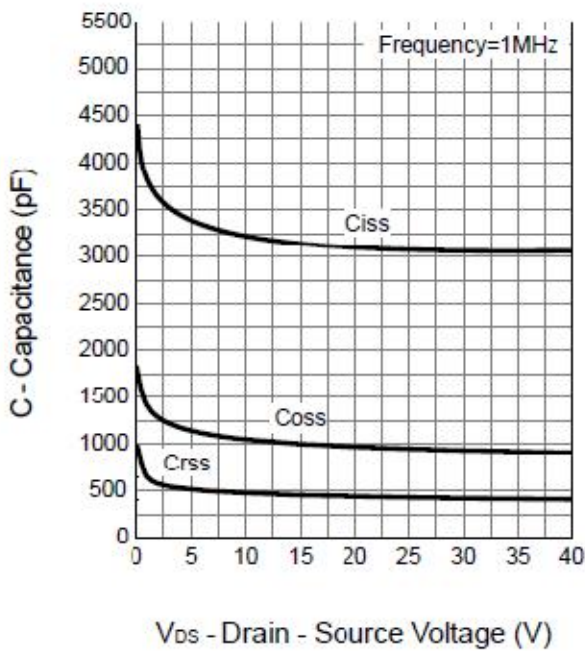
Drain-Source On Resistance



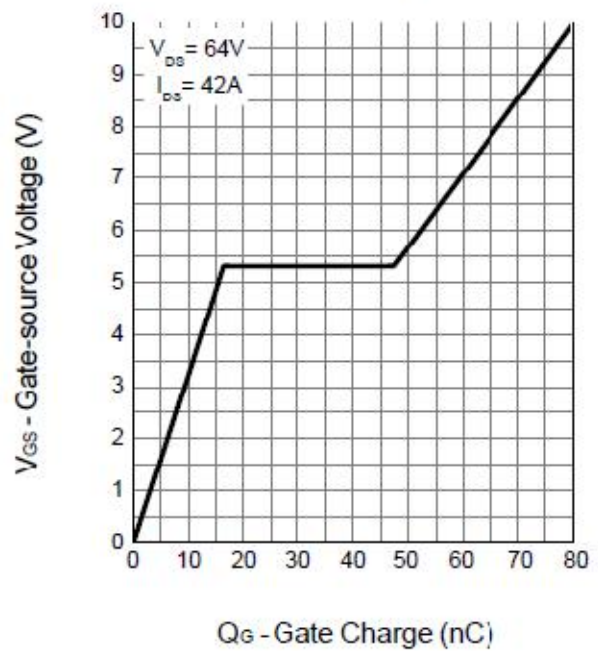
Source-Drain Diode Forward



Capacitance

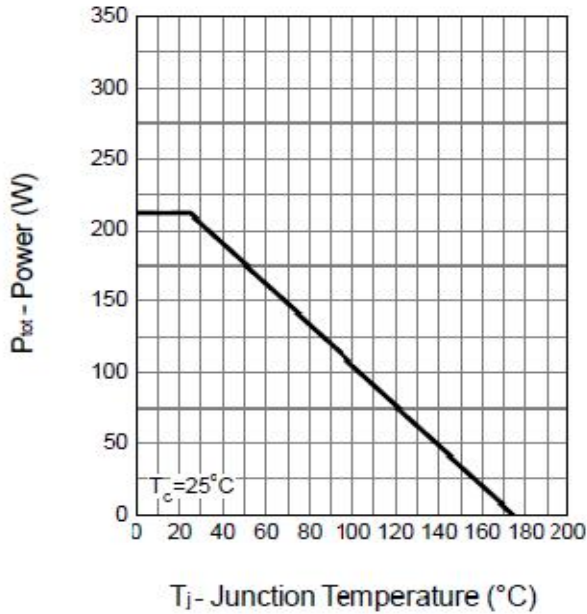


Gate Charge

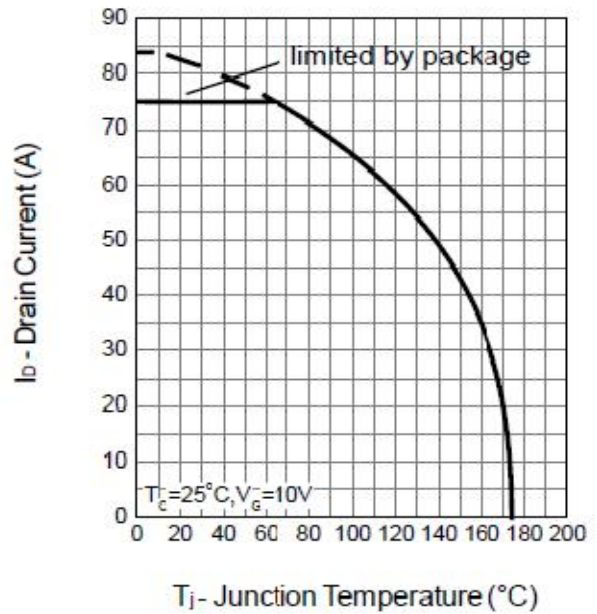


Typical Characteristics (Continued)

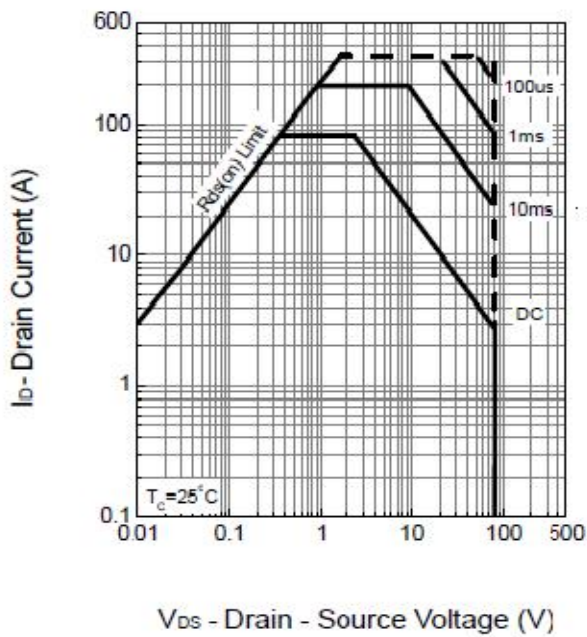
Power Dissipation



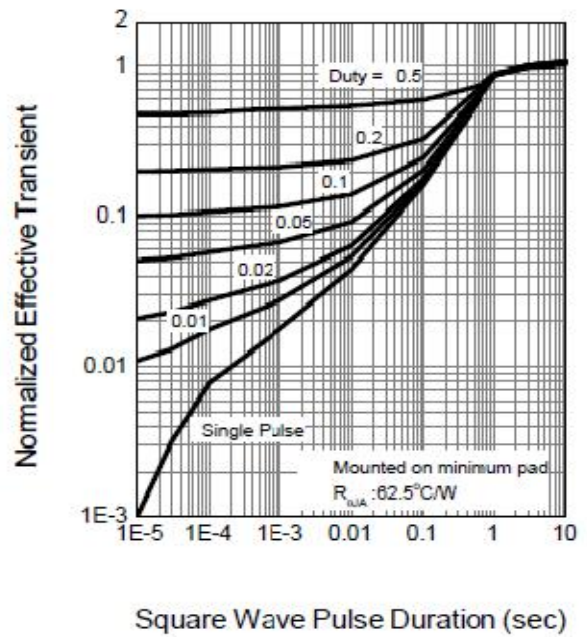
Drain Current



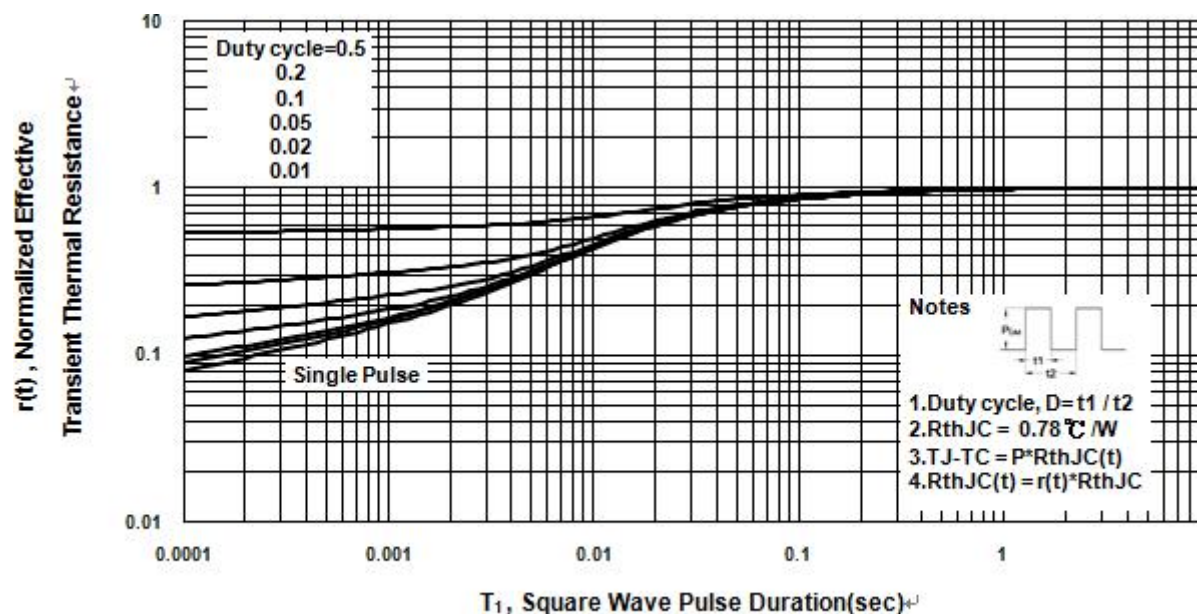
Safe Operation Area



Thermal Transient Impedance



Typical Characteristics (Continued)



Transient Thermal Response Curve